

THE TYPE SPECIMENS AND IDENTITY OF THE  
SPECIES DESCRIBED IN THE GENUS  
*LITHOBIUS* BY GEORGE NEWPORT IN 1844,  
1845 AND 1849 (CHILOPODA, LITHOBIOMORPHA)

By E. H. EASON

INTRODUCTION

GEORGE NEWPORT described eighteen nominal species under *Lithobius* one of which, *L. emarginatus*, he later removed to the genus *Henicops*. Pocock (1890, 1891a, 1891b, 1901) examined the type specimens of at least eight of these species but he only identified five, one of them incorrectly. Of the remainder, some have been identified more or less definitely by various authors from their original descriptions but the identity of the others has only been tentatively suggested or has, hitherto, been quite unknown. The type specimens of sixteen of Newport's species are preserved either in the British Museum (Natural History), the Hope Department of Zoology, Oxford or the Muséum National d'Histoire Naturelle, Paris. They have all been re-examined for the purpose of the present study and their identity is either confirmed or established for the first time. It is not always possible to tell whether Newport had one or several specimens before him when he wrote his descriptions and he made no formal designation of type specimens, but where only a single specimen is available it is regarded as the holotype: otherwise a lectotype is selected where necessary. An attempt is also made to determine the identity of the species for which type specimens have not been found.

Newport's 1844-45 paper was divided between parts 3 and 4 of volume 19 of the *Transactions of the Linnean Society of London*. The section in part 3, which includes a figure with the caption 'Lateral view of the head of *Lithobius americanus*, Newp.' (Tab. 33), was published in November 1844, but the section in part 4, which includes the written descriptions of this and eight other new species of *Lithobius*, was not published until November 1845 (Raphael, 1970). The species described in this paper are usually dated 1844, but clearly all except *L. americanus* should be dated 1845.

Conclusions as to the status and present classification of all the nominal species described by Newport in the genus *Lithobius* are summarized in Table 1.

1. *Lithobius hardwickei* Newport  
Fig. 1

*Lithobius Hardwickei* Newport, 1844, p. 96; 1845 (1844-45), p. 366

TYPE LOCALITY. Singapore.

TYPE SPECIMEN. *Holotype*: a male pseudomaturus of *L. forficatus* (Linn.) 16.5 mm long, dried and pinned, labelled "L. Hardwickei Newp." in Newport's hand and  
*Bull. Br. Mus. nat. Hist. (Zool.)* 21, 8

"Hardwicke Bequest, Singapore" on a separate ticket. British Museum (Natural History).

REMARKS. As Newport stated, this specimen is smaller than an adult of *L. forficatus* and of a paler colour than usual: it has only 39 antennal articles (Newport gave 41) but the prosternum is exactly as described by Newport with 5+8 teeth (Fig. 1).

According to Haase (1887), Pocock examined the specimen and found it to have posterior projections on T. 9, 11 and 13 but came to no conclusion as to its identity. Verhoeff (1937) merely noted that Newport's description of *L. hardwickei* agreed with none of the species of *Lithobius* he found in the Malay peninsula. Wang and Tang (1965), in the most recently published list of Chilopoda from Singapore, made no mention of the species and there is little doubt that *L. forficatus* was introduced to Singapore but never became established.

## 2. *Lithobius leachi* Newport

*Lithobius forficatus*: Leach, 1814, p. 408

*Lithobius Leachii* Newport, 1844, p. 96; 1844 (1844-45), Tab. 33, fig. 30

*Lithobius* sp. Newport, 1844 (1844-45), Tab. 33, fig. 31

*Lithobius Leachii*: Newport, 1845 (1844-45), p. 368

TYPE LOCALITY. Europe.

TYPE SPECIMEN. *Holotype*: a female of *L. forficatus* (Linn.) 20 mm long, dried and gummed to a card over the whole of its ventral aspect, labelled "L. Leachii Newp." in Newport's hand. British Museum (Natural History).

REMARKS. Newport examined the original Linnean specimen of *L. forficatus* and finding it to differ slightly in the form of the prosternum from Leach's specimen of this species, referred the latter to a new species, *L. leachi*. Synonymy of *L. leachi* with *L. forficatus* was tentatively suggested by Meinert (1868) and has never been disputed. Although the ventral aspect of the holotype is obscured owing to its being gummed to a card, it is undoubtedly the specimen which Newport examined and which Leach had, quite correctly, identified as *L. forficatus*.

## 3. *Lithobius pilicornis* Newport

*Lithobius pilicornis* Newport, 1844, p. 96

*Lithobius* sp. Newport, 1844 (1844-45), Tab. 33, fig. 34

*Lithobius pilicornis*: Newport, 1845 (1844-45), p. 369

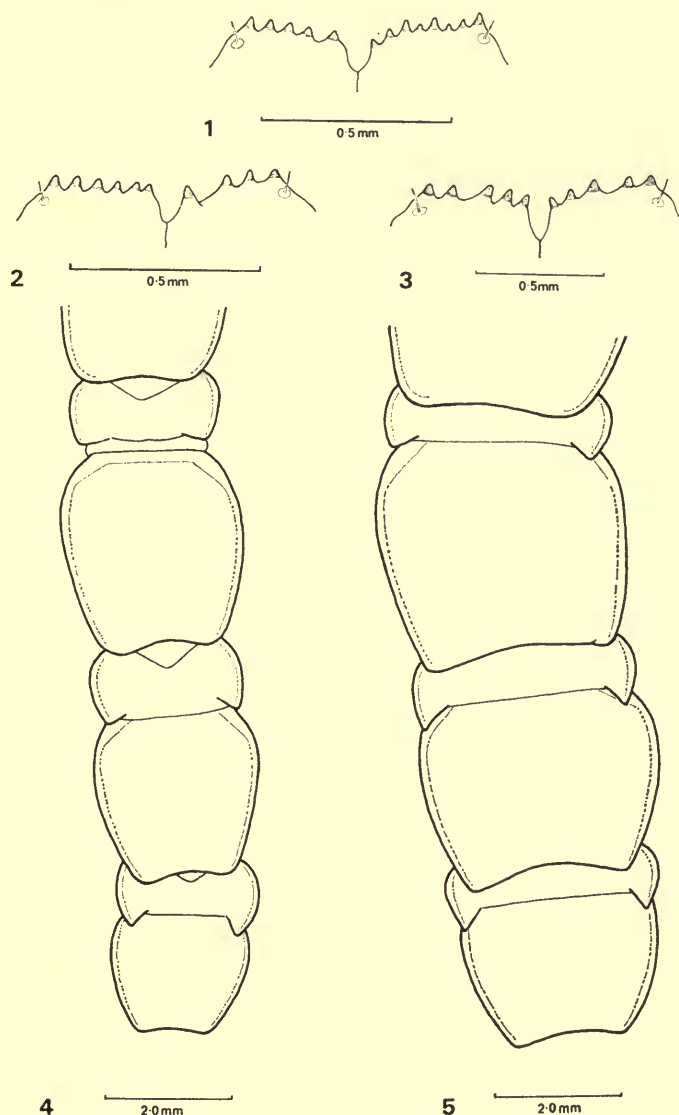
TYPE LOCALITY. England.

TYPE SPECIMEN. *Holotype*: a male 26 mm long, dried and pinned, labelled "L. pilicornis Newp." in Newport's hand. British Museum (Natural History).

REMARKS. This specimen was described by Pocock (1891a) who gave a full account of the species.

Gervais, in his list of published descriptions of species of Myriapoda (Walckenaer and Gervais, 1847), mentioned *Lithobius pulchricornis* and *L. pilicornis* as having

been described by Newport in 1844 and 1845 respectively. It seems that *pulchricornis* attaches to Newport's first (1844) brief description of *L. pilicornis*. The name does not appear in any of Newport's works and must have arisen from some carelessly written transcript of his earlier paper.



FIGS 1-5. 1, *Lithobius hardwickei*. Dental margin of prosternum of holotype, ventral. 3, *Lithobius americanus*. Dental margin of prosternum of holotype, ventral. 2, *Lithobius brevicornis*. Dental margin of prosternum of holotype, ventral. 4, *Lithobius elongatus*. 9th to 14th tergites of lectotype, dorsal. 5, *Lithobius monilicornis*. 9th to 14th tergites of male syntype, dorsal.

4. *Lithobius sloanei* Newport

*Lithobius Sloanei* Newport, 1844, p. 96; 1845 (1844-45), p. 369

TYPE LOCALITY. Unknown.

TYPE SPECIMEN. *Holotype*: a bleached and distorted female of *L. pilicornis* about 30 mm long, dried and pinned, labelled "L. Sloanei Newp." in Newport's hand and "Sir H. Sloane's coll. ?4167" on a separate ticket. British Museum (Natural History).

REMARKS. This specimen was described and discussed by Pocock (1891a) who identified it correctly and noted that the number 4167 corresponds to the following entry in Sir Hans Sloane's catalogue—"a middling good sized brown Scolopendra".

5. *Lithobius castaneus* Newport

*Lithobius castaneus* Newport, 1844, p. 96; 1845 (1844-45), p. 370

TYPE LOCALITY. Sicily.

TYPE SPECIMEN. *Holotype*: a female 20 mm long, dried and pinned, labelled "L. castaneus Newp." in Newport's hand. British Museum (Natural History).

REMARKS. This specimen was examined by Pocock (1890) who recognized its identity with *L. eximius* Meinert, 1872. He noted correctly that it only has 26 antennal articles (Newport gave 41). It agrees with Brolemann's (1930) description of *L. castaneus* except for the presence of the spine 15 VaT which was recorded by Meinert for *L. eximius*, and the extension of the distinctive sculpturing of the large tergites, rather faintly, on to T. 8, 10 and 12: Brolemann described this last feature on T. 1. 3 and 5 only. Other characters possessed by the holotype, all in agreement with Brolemann's description, are 6, 7, 7, 7 oblong coxal pores, lateral spines on the 14th and 15th coxae, and a simple claw on the gonopod with only a feeble lobe at the base of its external ridge and no denticles. These features place it in the subspecies *L. castaneus buchnerorum* described from Ischia by Verhoeff (1942) who assumed that the typical form of the species has a dentate female genital claw (Verhoeff, 1934). However, as Matic (1961) pointed out, many of the subspecies of *L. castaneus* described by Verhoeff were based on unstable characters and are probably without validity: should it be found that a geographical race with a dentate genital claw can be defined it can not be regarded as belonging to the nominate subspecies.

6. *Lithobius emarginatus* Newport

*Lithobius emarginatus* Newport, 1844, p. 96

*Henicops emarginatus*: Newport, 1845 (1844-45), p. 372

TYPE LOCALITY. New Zealand.

TYPE SPECIMEN. *Holotype*: a very defective female 8.5 mm long, labelled "H. emarginatus Newp." and "in the ground Capt. Ross" in Newport's hand: the specimen has been pinned through T. 7 damaging this and the adjacent tergites, but the pin has been withdrawn and the specimen is gummed to the apex of a triangular piece of card. British Museum (Natural History).

REMARKS. Pocock examined this specimen, redescribed the genera *Henicops* Newport and *Lamyctes* Meinert, and removed *emarginatus* to the latter (Pocock, 1901). Archey (1937) also saw the specimen which he described as being 'much shrivelled and somewhat mutilated'. He noted however that the 2+2 prosternal teeth were discernible in the type and it is confirmed that in this as in all other respects the specimen is identical with the common New Zealand species Archey described under *Lamyctes emarginatus*.

#### 7. *Lithobius rubriceps* Newport

*Lithobius rubriceps* Newport, 1845 (1844-45), p. 364

TYPE LOCALITY. Southern Spain.

REMARKS. Although Newport deposited his material belonging to this species in the British Museum, no type specimen has been found. It seems significant that Pocock, who examined and reported on most of Newport's type specimens of *Lithobius* in the British Museum, made no mention of *L. rubriceps* in any of his writings: this suggests that the specimen had already been lost or badly damaged before 1890 when Pocock made his first observations.

However, the space in the cabinet containing Newport's specimens and apparently allotted to *L. rubriceps* is occupied by four examples of the common Iberian species known as *L. insignis* Meinert, labelled "Lithobius rubriceps Newport, Lisbon" and "96.3.8.103-106, Pascoe". These specimens were collected by the entomologist F. P. Pascoe and presented to the Museum by Miss Pascoe. They are accompanied by two further specimens of *L. insignis* labelled "Cintra 25.11.96". Newport's description is unmistakable and there is no doubt that these specimens were correctly identified, probably by Pocock, and that *L. rubriceps* is the senior synonym of *L. insignis*.

Meinert (1872) described *L. insignis* and *L. gracilipes* as new species from Spain, suggesting *L. rubriceps* as a possible synonym of the latter. This choice on the part of Meinert is difficult to understand because Newport's description of *rubriceps* is much closer to *insignis* than to *gracilipes*. However, *gracilipes* only differs from *insignis* in being smaller with fewer coxal pores and may well prove to be another synonym of *L. rubriceps*.

The species was fully described by Machado (1952).

#### 8. *Lithobius fasciatus* Newport

*Lithobius fasciatus* Newport, 1845 (1844-45), p. 365

TYPE LOCALITY. Florence and Naples.

TYPE SPECIMENS. *Lectotype*: a specimen labelled "Lithobius fasciatus Newp." in Newport's hand. *Paralectotypes*: two unlabelled specimens accompanying the lectotype. Hope Department of Zoology.

REMARKS. These three specimens have been fully described in an earlier paper (Eason, 1970). They were examined by Pocock (1890) who was mistaken in believing them to be identical with *L. grossipes* C. L. Koch.

9. *Lithobius multidentatus* Newport

*Lithobius multidentatus* Newport, 1845 (1844-45), p. 365

TYPE LOCALITY. New York.

TYPE SPECIMEN. *Holotype*: a female 22 mm long labelled as the holotype of *Lithobius multidentatus* Newport by Dr. R. E. Crabill who removed it from the cabinet containing Newport's dried specimens in 1960, relaxed it in trisodium phosphate and placed it in spirit. British Museum (Natural History).

REMARKS. Wood (1865) recognized the identity of *L. multidentatus* with the species he had himself described under *Bothropolys nobilis* (Wood, 1863), apparently basing his conclusion on Newport's very brief description. In fact, the holotype has 9 + 9 prosternal teeth and not 8 + 8 as Newport stated. The specimen does, however, agree in all respects with Chamberlin's (1925) detailed description of *Bothropolys multidentatus* except for the presence of a small extra medial spur on the left gonopod, in addition to the usual two.

It is clear from Dr. Crabill's labelling of the holotype that he was satisfied as to its identity with the common North American species generally known as *B. multidentatus*.

10. *Lithobius americanus* Newport

Fig. 3

*Lithobius americanus* Newport, 1844 (1844-45), Tab. 33, fig. 29; 1845 (1844-45), p. 365

TYPE LOCALITY. North America.

TYPE SPECIMEN. *Holotype*: a rather defective male of *L. forficatus* (Linn.) 24 mm long, dried and pinned, labelled "Lithobius Americanus Newp. N.S." in Newport's hand. Hope Department of Zoology.

REMARKS. Newport distinguished this specimen from *L. forficatus* by its larger size and the form of the prosternum. The teeth of the latter are, indeed, irregularly spaced (Fig. 3) as in so many examples of *L. forficatus*.

Synonymy of *L. americanus* with *L. forficatus* was first proposed by Stuxberg (1871) and has never been disputed.

11. *Lithobius planus* Newport

*Lithobius* sp. Newport, 1844 (1844-45), Tab. 33, fig. 32

*Lithobius planus* Newport, 1845 (1844-45), p. 366

TYPE LOCALITY. North America.

TYPE SPECIMEN. *Holotype*: a rather defective male of *Bothropolys multidentatus* 18 mm long, dried and pinned, labelled "Lithobius planus Newp." in Newport's hand. Hope Department of Zoology.

REMARKS. Newport made no use of the arrangement of the coxal pores in his system and so failed to detect the affinity between *L. planus*, which he believed to be close to *L. variegatus* Leach, and *L. multidentatus*. Further, the holotype of *planus*

has 7+7 prosternal teeth whereas *multidentatus* was described as having 8+8 which is the more usual number in this species. Wood (1863, 1865) mentioned *L. planus* but merely reiterated Newport's description and made no suggestion as to its identity with any North American species known to him.

## 12. *Lithobius argus* Newport

*Lithobius Argus* Newport, 1845 (1844-45), p. 369

TYPE LOCALITY. Wellington, New Zealand.

TYPE SPECIMENS. *Syntypes*: a female pseudomaturus 18 mm long and a male praematurus 12.5 mm long, both of *L. forficatus* (Linn.), dried and pinned, labelled "Lithobius Zelandicus Newp." in Newport's hand. Hope Department of Zoology.

REMARKS. Newport distinguished this form from *L. forficatus* by its smaller size; only the female answers closely to his description.

Pocock (1891b) examined these specimens, noted that they were labelled "*Lithobius Zelandicus*", and confirmed that they belonged to *Lithobius* s.s. but came to no conclusion as to their exact identity. It seems that Newport first named them *Zelandicus* and then changed the name to *Argus* when writing his paper.

This species has never been rediscovered in New Zealand but Archey (1937), in his most recently published account of the Chilopoda of that country, never questioned its validity and regarded Newport's record as evidence of the occurrence of an indigenous species of *Lithobius* in a country where the Chilopod fauna consists otherwise almost entirely of genera confined to the southern hemisphere. There is no doubt that *L. forficatus* was introduced to New Zealand but lack of any subsequent records suggests that it has never become established.

## 13. *Lithobius brevicornis* Newport

Fig. 2

*Lithobius brevicornis* Newport, 1845 (1844-45), p. 370

TYPE LOCALITY. Naples.

TYPE SPECIMEN. *Holotype*: a male pseudomaturus of *L. forficatus* (Linn.) 17 mm long, dried and pinned, labelled "Lithobius brevicornis Newp." in Newport's hand. Hope Department of Zoology.

REMARKS. This specimen has 43 antennal articles, 15 ocelli on each side and 4+6 prosternal teeth (Fig. 2), whereas Newport gave 41 articles, 20 ocelli and 6+6 teeth. There is, however, no suggestion in the description that it was based on more than one specimen and this description seems, therefore, to have been inaccurate. Newport equated *L. brevicornis* with *L. vesuvianus* Costa, but no account of the latter appears ever to have been published.

Fanzago's (1874) and Fedrizzi's (1877) accounts of *L. brevicornis* are mere reiteration of the original description and Fedrizzi's mention of the antennae as having 14 articles was obviously due to a misprint. Although *L. brevicornis* figures in a

number of more recent Italian faunal lists it has never been redescribed and no suggestion has ever been made as to its identity.

#### 14. *Lithobius melanops* Newport

*Lithobius melanops* Newport, 1845 (1844-45), p. 371

TYPE LOCALITY. Sandwich, England.

TYPE SPECIMEN. *Holotype*: a very defective female 13 mm long, dried and pinned, labelled "Lithobius melanops Newp. (Kent 44.41)" in Newport's hand. British Museum (Natural History).

REMARKS. Pocock (1890) examined this specimen and concluded that it was conspecific with a common European species widely referred to as *L. glabratus* C. L. Koch 1847. Although the antennae and most of the legs are missing there is no doubt that Pocock was correct.

The species was described fully by Brolemann (1930).

#### 15. *Lithobius platypus* Newport

*Lithobius platypus* Newport, 1845 (1844-45), p. 371

TYPE LOCALITY. Egypt.

REMARKS. On the single plate devoted to Myriapoda and Hexapoda—Aptera in the Natural History portion of Savigny's "Description de l'Égypte", figure 3 represents a small lithobiomorph centipede, 11.5 mm long with short antennae each of 20 articles, 1 + 2, 1 ocelli on each side, no posterior tergal projections and with both 14th and 15th legs thickened. Newport based his description of *L. platypus* on this figure which, with the thickened posterior legs, was unlike any of the larger species of *Lithobius* with which he was familiar. Although, like all Savigny's drawings, this figure is beautifully executed it is inaccurate in that a short tergite is shown immediately behind T. 7; such a tergite is never found in *Lithobius* or any related genus. On the other hand, apart from this spurious tergite, the figure is a very fair representation of *L. vosseleri* Verhoeff, originally described by Verhoeff (1901) from Cyprus and recorded by Silvestri (1929) from a number of localities in North Africa including Alexandria (Egypt). Silvestri referred his specimens to a new variety, *propitia*, on the basis of some quite trivial characters and suggested the possibility of their being identical with *L. platypus*, the only other species of *Lithobius* ever recorded from Egypt.

Savigny's sight failed after he had completed his drawings but before he had finished his manuscript (Sherborn, 1897), so that no names, descriptions or exact localities attaching to his specimens of Myriapoda were ever published. Gervais (1837) commented on Savigny's figure of a lithobiid, but he did not give it a Latin binomen. Newport's description of *L. platypus* may, therefore, be the earliest published description of *L. vosseleri*, but there is no certainty of this and *L. platypus* should be rejected as a *nomen dubium*.

16. *Lithobius elongatus* Newport

Fig. 4

*Lithobius elongatus* Newport in Lucas, 1849, p. 383, Pl. 3, figs. 2, 2a, 2b, 2c and 2d

TYPE LOCALITY. Lac Tonga, Lac Houbeira and La Calle, Algeria.

TYPE SPECIMENS. *Lectotype*: a male 24 mm long, preserved in spirit, labelled "Lithobius elongatus Newport, Algerie Lucas" is here formally designated as the lectotype. *Paralectotypes*: a distorted male about 28 mm long and two males 19 mm long accompanying the lectotype but now placed in a separate tube. Muséum National d'Histoire Naturelle.

REMARKS. Newport's description of *L. elongatus* is inadequate by modern standards but this species was more fully described by Verhoeff (1891) under *Lithobius* (*Polybothrus*) *koenigi* and by Silvestri (1896), in both instances from Tunisian specimens agreeing in all essentials with the lectotype. Later Silvestri (1897) described more specimens from Sicily and proposed *elongatus* and *koenigi*, together with *L. impressus* C. L. Koch and *L. monilicornis* Newport, as junior synonyms of *L. nudicornis* Gervais. *L. nudicornis*, however, is based on an extremely scanty description of a specimen from Sicily (Gervais, 1837) and the name has been rejected by most authors in favour of *elongatus*. Whether *impressus* and *monilicornis*, which are usually accepted as synonyms of *elongatus*, should in fact be regarded as such is open to question and will be discussed under the next species. Owing to the uncertainty as to the relative status, not only of *elongatus* and *impressus* (= *monilicornis*) but of the numerous subspecies which have been described from time to time, the lectotype of *L. elongatus* is described below.

DESCRIPTION OF LECTOTYPE. *Size*: 24 mm long, 2.75 mm broad at T. 10, 15th legs 8 mm long. *Colour*: bleached with little pigmentation. *Antennae*: 10 mm long with 44 articles. *Ocelli*: apparently 1+4, 4, 3 but difficult to see owing to bleaching. *Prosternum*: with 5+5 faintly pigmented teeth; lateral spines appearing as unpigmented nodes, each surmounted by a transparent peg, but before bleaching occurred the lateral spines would, like the teeth, have been strongly pigmented and would have been counted as teeth by Newport. *Tergites* (Fig. 4): posterior angles of T. 9 right-angled, those of T. 11 and 13 with projections; T. 10 and 12 longer than broad with rounded posterior angles. *Coxal pores*: numerous with no regular arrangement.

*Spinulation*:

			Ventral					Dorsal		
	C	t	P	F	T	C	t	P	F	T
14	a	m	amp	amp	a	a	—	amp	p	p
15	a	m	amp	am	a	a	—	mp	p	—

14th *prefemur*: slightly expanded distally without any conspicuous setal tuft. 15th *prefemur*: with an ill-defined dorsal longitudinal sulcus and a moderate internal distal expansion bearing numerous setae; DpP placed immediately distal to the setae. 15th *apical claw*: simple. *Gonopods*: short and inconspicuous.

**FURTHER SPECIMENS.** In addition to the lectotype and three paralectotypes in the Muséum d'Histoire Naturelle there are five males and two females, dried and pinned, in the British Museum (Natural History) labelled "*Lithobius elongatus* Newp." in Newport's hand and "Tunis, 46, 103" on a separate ticket, all of which answer essentially to the above description. The same may be said of a female from Tunis (B.M.(N.H.) Reg. no. 90.12.16.23) preserved in spirit along with other specimens of "*L. impressus*" collected by Dr. Anderson in North Africa and reported on by Pocock (1892).

None of these specimens has posterior projections on T. 9 and the number of their antennal articles varies from 39 to 44. Of variations in spinulation, 14VpT, 14VmT and 15VpF may be present; 15VaF, 15VaT, 15DpP and 15DpF may be absent. Neither 15DaP nor ventral tarsal spines, both of which are found in the next species, were present in any of the above specimens.

### 17. *Lithobius monilicornis* Newport

Fig. 5

*Lithobius monilicornis* Newport in Lucas, 1849, p. 384, Pl. 3, figs 3, 3a, 3b, 3c and 3d

**TYPE LOCALITY.** Boudjaréa, near Algiers.

**TYPE SPECIMENS.** *Syntypes*: a male 30 mm long, a rather defective female 35 mm long and an immature female 16.5 mm long, all of *Eupolybothous impressus* (C. L. Koch), preserved in spirit, labelled "*Lithobius monilicornis* Newport, Algerie Lucas". Muséum National d'Histoire Naturelle.

**REMARKS.** Newport distinguished this species from *L. elongatus* by its more numerous antennal articles, smaller prosternal teeth, relatively broader T. 8, 10 and 12, and longer legs. All these features are shown by the above specimens which are undoubtedly identical with the form described from Oran and Algiers by L. Koch (1862) under *L. impressus* C. L. Koch, and we have no reason to doubt their identity with *L. impressus* as originally described from the Algerian coast by C. L. Koch (1841) and later figured by the same author (C. L. Koch, 1863).

More distinctive than the characters given by Newport for distinguishing this form from *L. elongatus* are the posterior projections on T.9 (Fig. 5) and the presence of ventral tarsal spines on the 14th and 15th legs, both of which were mentioned by L. Koch in his description of *L. impressus*.

Synonymy of *L. monilicornis* with *L. impressus* was first tentatively suggested by Meinert (1872).

**DESCRIPTION OF MALE.** *Size*: 30 mm long, 4 mm broad at T. 10, 15th legs 12 mm long; if it were not for the contraction of the trunk (Fig. 5) contrasting with the extension of that of the lectotype of *L. elongatus* with exposure of the intersegmental membranes (Fig. 4), the difference in length between these two specimens would be more marked. *Colour*: more bleached than the lectotype of *elongatus* with practically no pigmentation. *Antennae*: 15 mm long with 42 and 43 articles; they appear to have been damaged and to have undergone imperfect regeneration; the adult female has 49 and 52 antennal articles. *Ocelli*: not seen owing to bleaching.

*Prosternum*: with 6+6 teeth, faintly pigmented at their apices; being more numerous than in *elongatus* they appear relatively smaller; lateral spines appearing as unpigmented nodes but before bleaching occurred they would, like the teeth, have been strongly pigmented and would have been counted as teeth by Newport. *Tergites* (Fig. 5): posterior angles of T. 9 with small but distinct projections, those of T. 11 and 13 with more marked projections; T. 10 and 12 broader than long with posterior angles blunt, not rounded. *Coxal pores*: numerous with no regular arrangement.

*Spinulation*:

	Ventral						Dorsal				
	C	t	P	F	T	Ta	C	t	P	F	T
I4	a	m	amp	amp	am	a	a	—	amp	p	p
I5	a	m	amp	am	a	a	a	—	am	p	—

14th *prefemur*: slightly expanded distally without any conspicuous setal tuft. 15th *prefemur*: with a well-marked dorsal longitudinal sulcus and a prominent internal distal expansion bearing numerous setae and a distinct node. 15th *apical claw*: simple. *Gonopods*: short and inconspicuous.

**FURTHER SPECIMENS.** In addition to the three syntypes in the Muséum d'Histoire Naturelle a female, dried and pinned, in the British Museum (Natural History) labelled "*L. impressus* C. Koch" and "96.3.8.107 Pascoe, Oran" and a number of specimens from various localities in Algeria (B.M.(N.H.) Reg. nos. 90.12.16.20-22 and 24-28; 91.1.18.1-3), preserved in spirit and constituting the majority of the specimens of "*L. impressus*" collected by Dr. Anderson in North Africa and reported on by Pocock (1892), all answer essentially to the above description. They all have posterior projections on T. 9, the number of their antennal articles varies from 43 to 50 and in addition to possessing ventral tarsal spines on the 15th and usually also the 14th legs, 15 DaP is always present whereas 15 DpP is found only in females.

**DISCUSSION.** If the specimens mentioned so far in this paper under *L. elongatus* (see p. 208) and *L. monilicornis* (= *impressus*) were the only ones available for examination one would have little hesitation in referring the two forms to distinct subspecies or even to distinct species, but of Dr. Anderson's North African specimens of "*L. impressus*", those from Constantine (B.M.(N.H.) Reg. no. 91.1.18.4-7) are intermediate between the two both as regards the shape of the tergites and spinulation, so it seems that the characters separating *elongatus* and *impressus* are unstable. Neither *Polybothrus elongatus* nor *P. elongatus koenigi* as briefly described by Brolemann (1932) from North Africa can definitely be referred either to *elongatus* or to *impressus* as defined in the present study, but *Lithobius* (*Polybothrus*) *elongatus* var. *oraniensis* described by Verhoeff (1901) from a number of localities in the neighbourhood of Oran seems definitely to belong to *L. impressus*. *L. (Polybothrus) impressus corsicus* Léger and Duboscq (1903), reported from Corsica and the Maritime Alps (Brolemann, 1930), agrees with *impressus* in having posterior projections on T. 9 and ventral tarsal spines on the 15th legs, but is distinguished by 14DpP being replaced by a hook. Of the other six described subspecies, all either from the western Mediterranean islands or the European mainland, none can be easily placed.

The species or species group to which all these forms belong is clearly in need of revision but, in spite of the intermediate examples from Constantine, it seems advisable to retain, for the time being, the distinction between *elongatus* and *impressus* which belong to the genus *Eupolybothrus* Verhoeff and the subgenus *Allopolybothrus* Verhoeff as amended by Jeekel (1967); but they should be regarded as only subspecifically distinct.

The respective ranges of these two subspecies, if indeed they are true subspecies, are difficult to define exactly. C. L. Koch's figure (C. L. Koch, 1963: fig. 105) is almost certainly of *E. impressus impressus* but it was drawn from a specimen from Bône which is only 80 Km west of La Calle near the Tunisian border, one of the type localities of *E. impressus elongatus*. The latter, however, seems to be confined in North Africa to Tunisia and eastern Algeria whereas *E. i. impressus* extends along the Algerian coast westwards to Oran and probably further into Spanish Morocco.

### 18. *Lithobius lucasi* Newport

*Lithobius Lucasi* Newport in Lucas, 1849, p. 385, Pl. 3, figs 1, 1a, 1b, 1c and 1d

TYPE LOCALITY. Lac Tonga and Lac Houbeira, Algeria.

TYPE SPECIMENS. *Syntypes*: a male 28 mm long, a female 23 mm long and an immature male 17.5 mm long, all of *L. castaneus*, preserved in spirit, labelled "Lithobius Lucasii Newport, Algerie Lucas". Muséum National d'Histoire Naturelle.

REMARKS. Newport's mention of 5+5 prosternal teeth, the only character appearing to distinguish *L. lucasi* from *L. castaneus*, is hardly surprising because, although the stout lateral spines which Newport, no doubt, regarded as teeth are quite distinct in all three of the above specimens, the 2+2 small teeth are only evident in the immature male: in both the adult syntypes the dental margin of the prosternum is twisted and distorted giving the impression of a series of projections which might be mistaken for teeth. As in the holotype of *L. castaneus*, the type specimens of *L. lucasi* have oblong coxal pores, lateral spines on the 14th and 15th coxae, and the female has a simple claw on the gonopod with only a feeble lobe at the base of its external ridge and no denticles: these specimens, therefore, answer to Verhoeff's (1942) description of *L. castaneus buchnerorum*.

Brolemann (1921) suggested *L. lucasi* as a possible synonym of *L. castaneus*: he was probably guided by Newport's figure (1849: Pl. 3, fig. 1) which leaves little doubt as to its identity.

### ACKNOWLEDGEMENTS

My sincere thanks are due to Dr. J. P. Harding and Dr. J. G. Sheals for their helpful criticism of my manuscript; to the Trustees of the British Museum (Natural History) for facilities for studying material; to Mr. K. H. Hyatt of the Arachnida Section of the Department of Zoology of the Museum for his personal help; to Professor G. C. Varley and Mr. E. Taylor of the Hope Department of Zoology, Oxford, for enabling me to examine specimens from the Newport Collection; and to the Muséum National d'Histoire Naturelle, Paris and M. J.-M. Demange for lending me the type specimens of Newport's Algerian species.

TABLE I  
Summary of the species described by Newport in the genus *Lithobius*

Nominal species	Date	Type locality	Location of type material	Validity and status	Generic classification
<i>L. americanus</i>	1844	North America	Holotype; Hope Department	= <i>L. forficatus</i> (Linn., 1758)	
<i>L. argus</i>	1845	Wellington, New Zealand	Syntypes; Hope Department	= <i>L. forficatus</i> Syn. nov.	
<i>L. brevicornis</i>	1845	Naples	Holotype; Hope Department	= <i>L. forficatus</i> Syn. nov.	
<i>L. castaneus</i>	1844	Sicily	Holotype; British Museum (N.H.)	valid	<i>Lithobius</i>
<i>L. elongatus</i>	1849	Lac Tonga, Lac Houbeira, La Calle (Algeria)	Lectotype, paralectotypes; Muséum d'Histoire Naturelle	? subspecies of <i>E. impressus</i> (C. L. Koch, 1841)	<i>Eupolybothrus</i> ( <i>Allopolybothrus</i> )
<i>L. emarginatus</i>	1844	New Zealand	Holotype; British Museum (N.H.)	valid	<i>Lamydes</i>
<i>L. fasciatus</i>	1845	Florence, Naples	Lectotype, paralectotypes; Hope Department	valid	<i>Eupolybothrus</i> s.s.
<i>L. hardwickei</i>	1844	Singapore	Holotype; British Museum (N.H.)	= <i>L. forficatus</i> Syn. nov.	
<i>L. leachi</i>	1844	Europe	Holotype; British Museum (N.H.)	= <i>L. forficatus</i>	
<i>L. lucasi</i>	1849	Lac Tonga, Lac Houbeira (Algeria)	Syntypes; Muséum d'Histoire Naturelle	= <i>L. castaneus</i> Newport 1844	
<i>L. melanops</i>	1845	Sandwich, England	Holotype; British Museum (N.H.)	valid	<i>Lithobius</i>
<i>L. monilicornis</i>	1849	Boudjareá, Algeria	Syntypes; Muséum d'Histoire Naturelle	= <i>E. impressus</i>	
<i>L. multidentatus</i>	1845	New York	Holotype; British Museum (N.H.)	valid	<i>Bohropolys</i>
<i>L. pilicornis</i>	1844	England	Holotype; British Museum (N.H.)	valid	<i>Lithobius</i>
<i>L. planus</i>	1845	North America	Holotype; Hope Department	= <i>B. multidentatus</i> (Newport, 1845) Syn. nov.	
<i>L. platypus</i>	1845	Egypt	none	<i>nomen dubium</i>	
<i>L. rubriceps</i>	1845	Southern Spain	none	valid = <i>L. insignis</i> Meinert, 1872 Syn. nov.	<i>Lithobius</i>
<i>L. sloanei</i>	1844	none	Holotype; British Museum (N.H.)	= <i>L. pilicornis</i> Newport, 1844	

## REFERENCES

- ARCHEY, G. 1937. Revision of the Chilopoda of New Zealand. *Rec. Auckland Inst. Mus.* **2** : 43-100.
- BROLEMAN, H. W. 1921. Liste des Myriapodes signalés dans le nord de l'Afrique. *Bull. Soc. Sci. nat. Maroc* **1** : 99-110.
- 1930. Myriapodes. Chilopodes. *Faune Fr.* **25** : 1-405
- 1932. Tableaux de détermination des Chilopodes signalés en Afrique du Nord. *Bull. Soc. Hist. nat. Afr. N.* **23** (2) : 31-64.
- CHAMBERLIN, R. V. 1925. The Ethopolidae of America north of Mexico. *Bull. Mus. comp. Zool. Harv.* **57** : 383-437.
- EASON, E. H. 1970. A redescription of the species of *Eupolybothrus* Verhoeff s.s. preserved in the British Museum (Natural History) and the Hope Department of Zoology, Oxford (Chilopoda, Lithobiomorpha). *Bull. Br. Mus. nat. Hist. (Zool.)* **19** : 289-310.
- FANZAGO, F. 1874. I Chilopodi Italiani monografia. *Atti. Accad. scient. veneto-trent.-istriana* **3** : 17-64.
- FEDRIZZI, G. 1877. I Litobi Italiani. *Atti. Accad. scient. veneto-trent.-istriana* **5** (2) : 184-233.
- GERVAIS, P. 1837. Études pour servir a l'histoire naturelle des Myriapodes. *Annls Sci. nat. Zool.* (2) **7** : 35-60.
- HAASE, E. 1887. Die Indisch-Australischen Myriopoden 1. Chilopoden. *Abh. Ber. K. zool. anthrop.-ethn. Mus. Dresden* **1**, No. 5 : 1-118.
- JEEKE, C. A. W. 1967. On two Italian *Lithobius* species described by Silvestri, with taxonomic notes on the genus *Eupolybothrus* Verhoeff (Chilopoda, Lithobiidae). *Beaufortia* **14** : 165-175.
- KOCH, C. L. 1841. Arachnida und Myriapoda. In *Wagner's Reisen in der Regentschaft Algier* **3** : 211-225. Leipzig.
- 1863. *Die Myriapoden*. Halle: H. W. Schmidt.
- KOCH, L. 1862. *Die Myriapodengattung Lithobius*. Nürnberg: J. L. Lotzbeck.
- LEACH, W. E. 1814. Crustaceology. In *Brewster's Edinburgh Encyclopaedia* **7** : 383-437. Edinburgh.
- LÉGER, L. & DUBOSCQ, O. 1903. Recherches sur les Myriapodes de Corse et leurs parasites. *Archs Zool. exp. gén.* (4) **1** : 307-358
- LUCAS, H. 1849. Histoire naturelle des animaux articulés. In *Exploration scientifique de l'Algérie pendant les années 1840, 1841, 1842*. Zoologie 1. Paris.
- MACHADO, A. 1952. Miriápodes de Portugal, primeira parte: Quilópodes. *Broteria* **21** : 65-159.
- MATIC, Z. 1961. Chilopodi, specialmente cavernicoli, raccolti in Toscana da Paola e Benedetto Lanza e da Giorgio Marcucci. *Monitore zool. ital.* **68** : 190-199.
- MEINERT, F. 1868. Danmarks Scolopender og Lithobier. *Naturh. Tidsskr.* (3) **5** : 241-268.
- 1872. Myriapoda Musaei Havniensis: bidrag til myriapodernes morfologi og systematik; II Lithobiini. *Naturh. Tidsskr.* (3) **8** : 281-344.
- NEWPORT, G. 1844. A list of the species of Myriapoda, order Chilopoda, contained in the cabinets of the British Museum, with a synoptic description of forty-seven new species. *Ann. Mag. nat. Hist.* **13** : 94-101.
- 1844-45. Monograph of the class Myriapoda, order Chilopoda; with observations on the general arrangement of the Articulata. *Trans. Linn. Soc. Lond.* **19** : 265-302 (1844), 349-439 (1845).
- POCOCK, R. I. 1890. Contributions to our knowledge of the Chilopoda of Liguria. *Annali Mus. civ. Stor. nat. Giacomo Doria* **29** : 59-68.
- 1891a. The history of a long forgotten British *Lithobius*. *Ann. Mag. nat. Hist.* (6) **7** : 367-374.
- 1891b. Descriptions of some new species of Chilopoda. *Ann. Mag. nat. Hist.* (6) **8** : 152-164.
- 1892. On the Myriapoda and Arachnida collected by Dr. Anderson in Algeria and Tunisia. *Proc. zool. Soc. Lond.* **1892** : 24-28.
- 1901. The Chilopoda or centipedes of the Australian continent. *Ann. Mag. nat. Hist.* (7) **8** : 451-463.

- RAPHAEL, S. 1970. The publication dates of the *Transactions of the Linnean Society of London*, Series I, 1791-1875. *Biol. J. Linn. Soc.* **2** : 61-76.
- SHERBORN, C. D. 1897. On the dates of the natural history portion of Savigny's "Description de L'Égypte". *Proc. zool. Soc. Lond.* **1897** : 285-288.
- SILVESTRI, F. 1896. Una escursione in Tunisia (Symphyla, Chilopoda, Diplopoda). *Naturalista sicil. N.S.* **1** : 143-161.
- 1897. Contributio alla conoscenza dei Chilopodi e Diplopodi della Sicilia. *Boll. Soc. ent. ital.* **29** : 233-261.
- 1929. Miriapodi Chilopodi. In *Risultati zoologici della missione inviata dalla R. Società Geografica Italiana per l'esplorazione dell'Oasi di Giarabub (1926-7)*. *Annali Mus. civ. Stor. nat. Giacomo Doria* **53** : 308-312.
- STUXBERG, A. 1871. Bidrag till Skandnaviens Myriapodologi II. Sveriges Chilopoden. *Ofvers. K. VetenskAkd. Förh. Stockh.* **28** : 493-512.
- VERHOEFF, K. W. 1891. Ueber einige nordafrikanische Chilopoden. *Berl. ent. Z.* **36** : 65-70.
- 1901. Beiträge zur Kenntniss paläarktischer Myriopoden. XVI. Aufsatz: zur vergleichenden Morphologie, Systematik und Geographie der Chilopoden. *Nova Acta Acad. Caesar. Leop. Carol.* **77** : 369-465.
- 1934. Beiträge zur Systematik und Geographie der Chilopoden. *Zool. Jb. (Syst.)* **66** : 1-112.
- 1937. Chilopoden aus Malacca, nach den Objecten des Raffles Museum in Singapore. *Bull. Raffles Mus.* **13** : 198-270.
- 1942. Zur Kenntnis mediterraner Chilopoden besonders der Insel Ischia. *Z. Morph. Okol. Tiere* **38** : 483-525.
- WALCKENAER, C. A. & GERVAIS, P. 1847. *Histoire naturelle des Insectes Aptères* 4. Paris.
- WANG, Y. M. & TANG, M. 1965. The centipedes of the Malay archipelago and South Sea islands: Singapore, Sarawak and Sumatra. *Q. Jl Taiwan Mus.* **18** : 443-452.
- WOOD, H. C. 1863. On the Chilopoda of North America, with a catalogue of all the specimens in the collection of the Smithsonian Institution. *J. Acad. nat. Sci. Philad. (2)* **5** : 5-52.
- 1865. On the Myriapoda of North America. *Trans. Am. phil. Soc. N.S.* **13** : 137-248.